

(19)



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(11)

**EP 1 182 144 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention  
of the grant of the patent:  
14.01.2004 Bulletin 2004/03

(51) Int Cl.7: **B65D 75/58**

(21) Application number: **01306761.6**

(22) Date of filing: **08.08.2001**

(54) **Fitment for spouted pouch**

Ausgusstülle für Beutel mit Mundstück

Raccord pour poche à bec verseur

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE TR**

(30) Priority: **21.08.2000 US 643033**

(43) Date of publication of application:  
**27.02.2002 Bulletin 2002/09**

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(56) References cited:  
**WO-A-96/21599** **US-A- 3 690 524**  
**US-A- 5 911 340** **US-A- 6 050 451**

- **PATENT ABSTRACTS OF JAPAN** vol. 017, no.  
682 (M-1528), 14 December 1993 (1993-12-14) -&  
**JP 05 229566 A (ARUTETSUKU KK)**, 7 September  
1993 (1993-09-07)

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**EP 1 182 144 B1**

## Description

**[0001]** In the prior art, it is known to use a fitment or spout with a canoe shaped base with extended meltable fins oriented 180° apart, and multiple horizontal ribs spaced evenly across the height of the canoe. The canoe shape and the meltable fins assure gradual transition from the two plies of film (one on each side of the fitment) to the maximum width of the canoe in the diametrical center of the fitment.

**[0002]** In order to seal or weld the fitments to the film at the fastest possible rate, and to reduce potential leaking at the base, the base can be made with horizontal ribs to increase the sealing pressure and to reduce the dwell time. However, the sealing pressure must not damage or misshape the inner diameter of the fitment. To avoid such problems, the canoe base is typically made more massive than would otherwise be required.

**[0003]** Because the maximum temperature of the jaws is limited by the characteristics of the film, the two driving variables of the sealing equation become the dwell time and the pressure. That is, a canoe base which is enlarged for the above reasons requires increased dwell time and pressure to bring it to the sealing temperature, which is counterproductive to the production rates of the fitment attachment process.

**[0004]** The attachment of this kind of fitment is disclosed in EP-A-1106515. Other prior art includes US-A-5,911,340; US-A-5,716,471; US-A-4,909,434; US-A-3,894,381; and JP-A-5229566.

**[0005]** These and other objects are attained by providing an injection molded fitment with reduced plastic in the canoe base, to retain the shape and length of the canoe, but to reduce the amount of plastic in transition areas and in the wall thickness of the base. This reduces the mass of the canoe and the required preheat/sealing dwell time. An alternative embodiment employs radially extending meltable fins in place of the canoe base. In order to compensate for the reduction in the rigidity of the base and the resulting reduction in ability to withstand the pressure of the sealing bars, the fitment is installed with a heated mandrel inserted through the inner diameter of the fitment. More specifically, as the fitment travels along the track from the vibratory bowl to the sealing station, a heated mandrel shaped and sized to the inner diameter of the fitment is inserted into the inner diameter of the fitment. In order to avoid unnecessary softening of the fitment, the temperature of the mandrel is typically 20-30°F. (11-17°C) below the softening temperature of the resin from which the fitment is molded. In order to heat the fitment thoroughly from the inside prior to installation without slowing down the installation process, the mandrel is typically inserted at least one cycle away from the sealing position. The insertion of the heated mandrel into the inside diameter of the fitment will further prevent the collapse or misshaping of the base. Indeed, the sealing dwell time is thereby reduced by both the reduction of plastic in the base and

the heating of the fitment by the mandrel.

**[0006]** Particular embodiments in accordance with this invention will now be described with reference to the accompanying drawings; in which:-

Figure 1 is a top plan view of a typical prior art fitment;

Figure 2 is a side view partially in phantom of the fitment of the present invention;

Figure 3 is a top plan view of the fitment of the present invention;

Figure 4 is a side plan view, partially in cross-section, of the fitment of the present invention, shown with the heated mandrel inserted through the inner diameter thereof;

Figure 5 is a top view of the fitment of the present invention as it is being sealed to the film panels;

Figure 6 is a perspective view of an alternative embodiment of the present invention wherein meltable fins are substituted for the canoe-shaped base; and,

Figure 7 is a top plan view of the embodiment of Figure 6.

**[0007]** Referring now to the drawings in detail wherein like numerals refer to like elements throughout the several views, one sees that Figure 1 is a top plan view of a prior art fitment 200. Fitment 200 includes canoe-shaped walls 202, 204 which join to form pointed ends 206, 208. The shape of walls 202, 204 and pointed ends 206, 208 allows for a gradual transition from the two plies of film (not shown, but which are sealed to walls 202, 204) to the maximum width of the canoe in the diametrical center 210 of the fitment 200, wherein spout aperture 212 is formed. Spout aperture 212 passes through a stem (not shown) which typically includes an externally threaded structure and a cylindrical flange 214 and further forms spout walls to allow the dispensing of liquid or near-liquid product from a container formed by two plastic sheets sealed to walls 202, 204. While not shown in Figure 1, walls 202, 204 may include a ribbed structure, with ribs extending from pointed end 206 to pointed end 208.

**[0008]** Fitment 10 is typically molded from polyethylene or polypropylene plastic, although those skilled in the art may recognize that other equivalents are available.

**[0009]** Fitment 10 of the present invention, as shown in Figure 2, is envisioned to have an aperture area wall 13 with a thickness in the range of 0.020 inches 0.5mm, as compared to a typical prior art value in the range of 0.035 to 0.040 inches (0.9 to 1.0mm). Similarly, fitment 10 is envisioned to have vertical support walls 14, 16 with a thickness in the range of 0.015 to 0.025 inches (0.4 to 0.6mm) rather than the typical prior art value of 0.035 to 0.040 inches (0.9 to 1.0mm) and sealing ribs 30,32,34,36 which are 0.025 to 0.030 inches (0.6 to 0.8mm) wide rather than the typical prior art value of

0.040 to 0.050 inches (1.0 to 1.2 mm). Again, this reduced material allows fitment 10 to be installed with a reduced sealing dwell time.

[0010] As shown in Figure 2, canoe wall 16 (as well as canoe wall 14) includes ribs 30, 32, 34, 36 extending between pointed ends 20, 22. Stem 40 extends from upper wall 38 and includes external threads 42 and cylindrical stop 44 which interact with an internally threaded cap (not shown) to seal mouth 46 of spout aperture 12 which is formed at the top of stem 40. As shown in Figure 3, aperture 12 can include an enlarged diameter area 50 proximate to mouth 46 and inwardly from external threads 42.

[0011] Fitment 10, an alternative embodiment of the present invention, is illustrated in Figure 6. A retaining ring 300 serves as a support for cylindrical skirt 302 on the underside and spout 304 on the upperside. Aperture 12, similar to aperture 12 illustrated in previous drawings herein, passes through cylindrical skirt 302 and spout 304. Melttable fins 306, 308 extend radially from cylindrical skirt 302.

[0012] Figure 4 illustrates heated mandrel 100 inserted through aperture 12 during the installation process. Mandrel 100 is typically heated to 20-30°F (11-17°C) below the softening point of the resin.

[0013] Figure 5 illustrates the sealing of the sheets 102, 104 of plastic film to canoe walls 16, 18 of fitment 10 by sealing jaws 106, 108 of a fitments to film sealing apparatus 110. Sealing jaws 106, 108 are heated to perform the sealing operation and have opposing recesses 110, 112 which form cavity 114 which is complementary in shape to fitment 10 (See Figures 2, 3 or 6).

## Claims

### 1. A spout assembly (10) including:

a spout aperture (12) bounded by a cylindrical wall (13) extending throughout the spout assembly; and,  
a first wall (14) and a second wall (16) supporting multiple sealing ribs (30, 32, 34) and extending away from the cylindrical wall (13) of the aperture (12), said first (14) and second (16) walls and ribs (30, 32, 34) forming an area through which said spout aperture (12) passes;

**characterized in that** substantially all of said first wall (14), substantially all of said second wall (16), substantially all of said cylindrical wall (13) and substantially all of the multiple sealing ribs (30, 32, 34) have a thickness substantially equal to 0.5mm (0.020 inches).

### 2. A spout assembly according to claim 1, wherein the ribs (30, 32, 34) are formed on said first (14) and second (16) walls and across the cylindrical wall

(13) of the aperture (12) and are substantially perpendicular to a longitudinal axis of said spout aperture (12).

### 3. A spout assembly according to claim 1 or 2, wherein said first and second walls (14, 16) and horizontal ribs (30, 32, 34) form a canoe-shaped profile.

### 4. A method of securing a fitment to a package including the steps of:

providing package wall material (102, 104) including first and second edges of said material; providing a fitment (10) with relatively thin walls from a source;  
engaging said fitment (10) with a mandrel (100);  
inserting said fitment (10) between said first and second edges of said material (102, 104);  
closing outer sealing jaws (106, 108) onto the first and second edges of said material (102, 104) with said fitment (10) engaged on the mandrel (100); and,  
sealing said fitment (10) to a portion of said first and second edges (102, 104);

wherein said mandrel (100) is heated and thereby warms said fitment (10) before said sealing step **characterised in that** the relatively thin walls have a thickness substantially equal to 0.5 mm (0.020 inches).

### 5. A method of securing a fitment according to claim 4, wherein said heated mandrel (100) heats said fitment (10) to a temperature between substantially 11-17°C (20-30°F) below a softening point of the material of said fitments (10).

## Patentansprüche

### 1. Tüllen-Vorrichtung (10) enthaltend:

eine Tüllenöffnung (12), welche durch eine zylindrische Wand (13) begrenzt ist, welche sich durch die Tüllen-Vorrichtung erstreckt; und  
eine erste Wand (14) und eine zweite Wand (16), welche mehrere Schweißrippen (30, 32, 34) tragen und sich von der zylindrischen Wand (13) der Öffnung (12) wegerstrecken, wobei die ersten (14) und zweiten (16) Wände und Rippen (30, 32, 34) einen Bereich bilden, durch welchen die Tüllenöffnung (12) verläuft;

**dadurch gekennzeichnet, dass** im wesentlichen die ganze erste Wand (14), im wesentlichen die ganze zweite Wand (16), im wesentlichen die ganze zylindrische Wand (13) und im wesentlichen die

ganzen mehreren Schweißrippen (30, 32, 34) eine Dicke haben, welche im wesentlichen gleich 0,5 mm (0,020 Inch) ist.

2. Tüllen-Vorrichtung nach Anspruch 1, bei welcher die Rippen (30, 32, 34) an den ersten (14) und zweiten (16) Wänden und über die zylindrische Wand (13) der Öffnung (12) gebildet sind und im wesentlichen zu einer Längsachse der Tüllenöffnung (12) senkrecht sind. 5  
10
3. Tüllen-Vorrichtung nach Anspruch 1 oder 2, bei welcher die ersten und zweiten Wände (14, 16) und die horizontalen Rippen (30, 32, 34) ein kanuförmiges Profil bilden. 15
4. Verfahren zum Befestigen einer Tülle an einer Packung enthaltend die Schritte:
  - Vorsehen eines Packungswandmaterials (102, 104), welches erste und zweite Kanten des Materials enthält, 20
  - Vorsehen einer Tülle (10) mit relativ dünnen Wänden von einer Quelle; in Eingriff bringen der Tülle (10) mit einem Kern (100); 25
  - Einführen der Tülle (10) zwischen die ersten und zweiten Kanten des Materials (102, 104);
  - Schließen von äußeren Schweißklauen (106, 108) auf den ersten und zweiten Kanten des Materials (102, 104), wobei die Tülle (10) mit dem Kern (100) in Eingriff ist; und 30
  - Verschweißen der Tülle (10) mit einem Teil der ersten und zweiten Kanten (102, 104);
  - wobei der Kern (100) erhitzt wird und dadurch die Tülle (10) vor dem Verschweißungsschritt erwärmt, **dadurch gekennzeichnet, dass** die relativ dünnen Wände eine Dicke haben, welche im wesentlichen gleich 0,5 mm (0,020 Inch) ist. 35  
40
5. Verfahren zur Befestigung einer Tülle nach Anspruch 4, bei welchem der erhitzte Kern (100) die Tülle (10) auf eine Temperatur zwischen im wesentlichen 11-17°C (20-30°F) unter dem Erweichungspunkt des Materials der Tülle (10) erhitzt. 45

#### Revendications

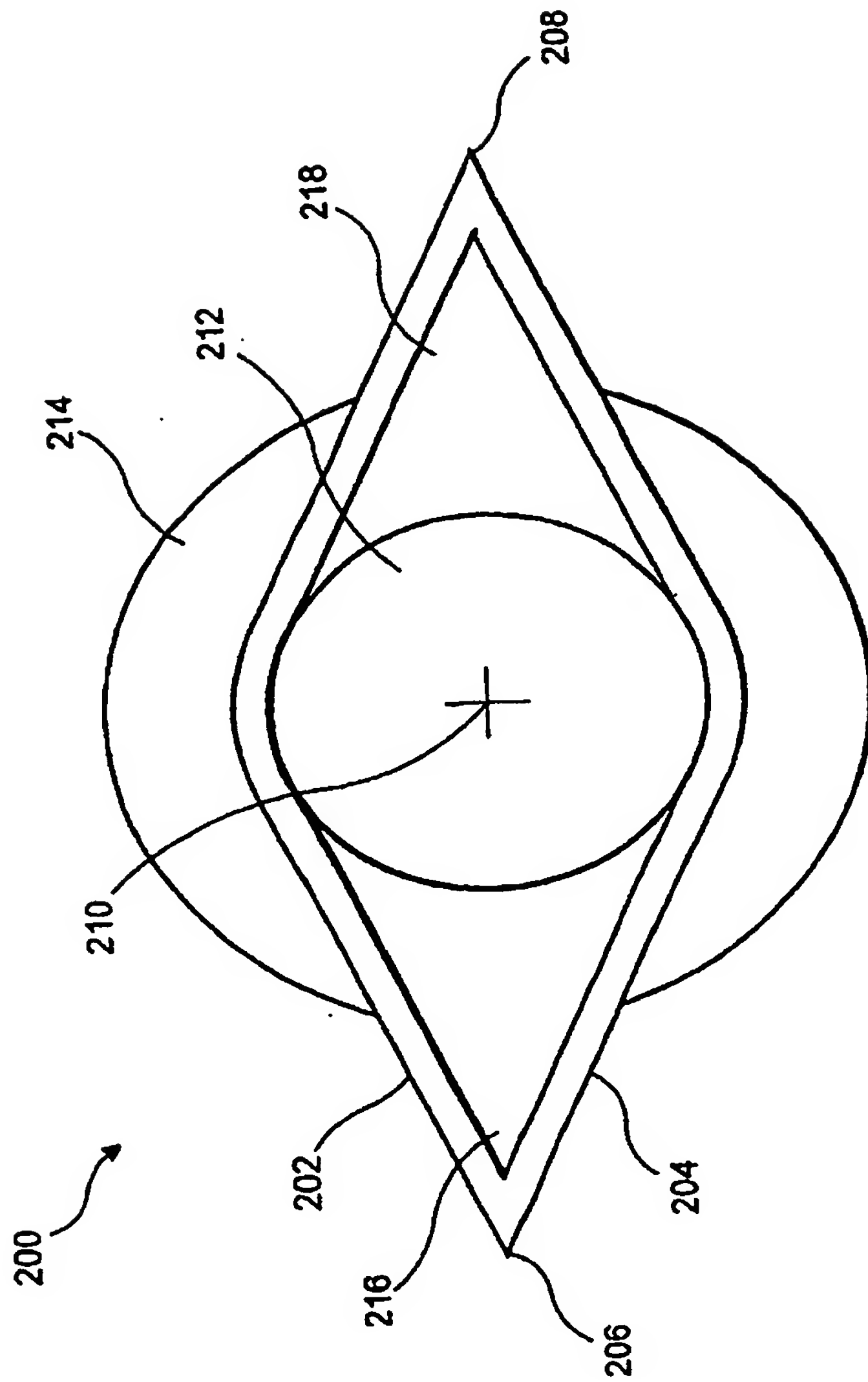
1. Ensemble de bec (10) comprenant : 50
  - une ouverture de bec (12) limitée par une paroi cylindrique (13) s'étendant à travers l'ensemble de bec ; et,
  - une première paroi (14) et une deuxième paroi (16) supportant des nervures multiples d'étanchéité (30, 32, 34) et s'étendant hors de la paroi cylindrique (13) de l'ouverture (12), lesdites 55

premières (14) et deuxièmes (16) parois et nervures (30, 32, 34) formant une zone à travers laquelle passe ladite ouverture de bec (12) ; **caractérisé en ce que** substantiellement toute ladite première paroi (14), substantiellement toute ladite deuxième paroi (16), substantiellement toute ladite paroi cylindrique (13) et substantiellement toutes les nervures multiples d'étanchéité (30, 32, 34) ont une épaisseur substantiellement égale à 0,5 mm.

2. Ensemble de bec selon la revendication 1, dans lequel les nervures (30, 32, 34) sont formées sur lesdites première (14) et deuxième (16) parois et à travers la paroi cylindrique (13) de l'ouverture (12) et sont substantiellement perpendiculaires à un axe longitudinal de ladite ouverture de bec (12).
3. Ensemble de bec selon la revendication 1 ou 2, dans lequel lesdites première et deuxième parois (14, 16) et nervures horizontales (30, 32, 34) forment un profil en forme de canoë.
4. Procédé de fixation d'un accessoire à un paquet comprenant les étapes de
  - fourniture du matériau de la paroi de paquet (102, 104) y compris les premiers et deuxièmes bords dudit matériau ;
  - fourniture d'un accessoire (10) aux parois relativement minces à partir d'une source ;
  - engagement dudit accessoire avec un mandrin (100) ;
  - insertion dudit accessoire (10) entre lesdits premier et deuxième bords dudit matériau (102, 104) ;
  - fermeture des mâchoires extérieures de scellement (106, 108) sur les premier et deuxième bords dudit matériau (102, 104) alors que ledit accessoire (10) est engagé sur le mandrin (100) ; et,
  - scellement dudit accessoire (10) avec une partie desdits premier et deuxième bords (102, 104) ;

dans lequel ledit mandrin (100) est chauffé, ce par quoi il chauffe ledit accessoire (10) avant ladite étape de scellement, **caractérisé en ce que** les parois relativement minces ont une épaisseur substantiellement égale à 0,5 mm.

5. Procédé de fixation d'un accessoire selon la revendication 4, dans lequel ledit mandrin chauffé (100) chauffe ledit accessoire (10) à une température qui est entre substantiellement 11 et 17 °C au-dessous d'un point de ramollissement du matériau desdits accessoires (10).



**FIG. 1**  
**PRIOR ART**

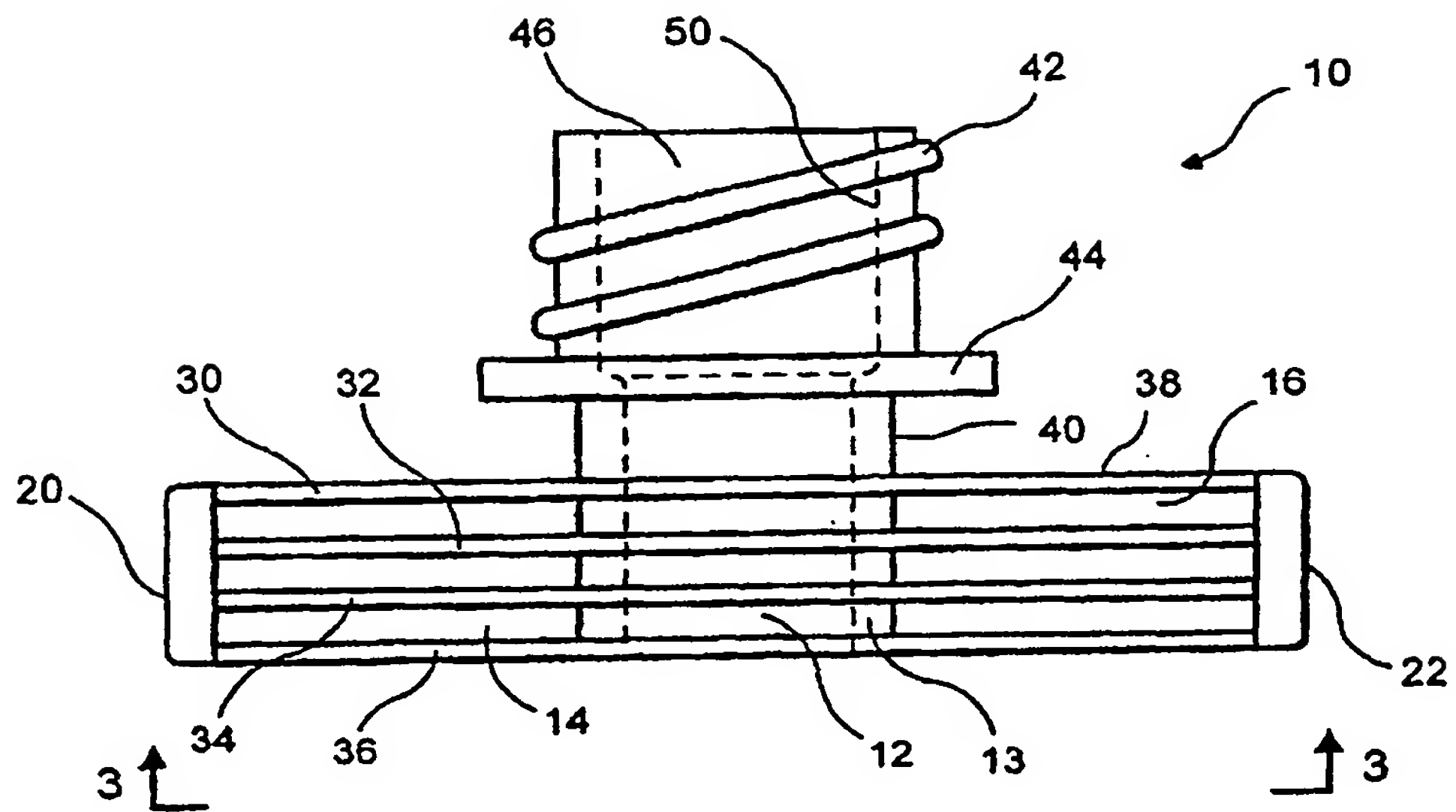


FIG. 2

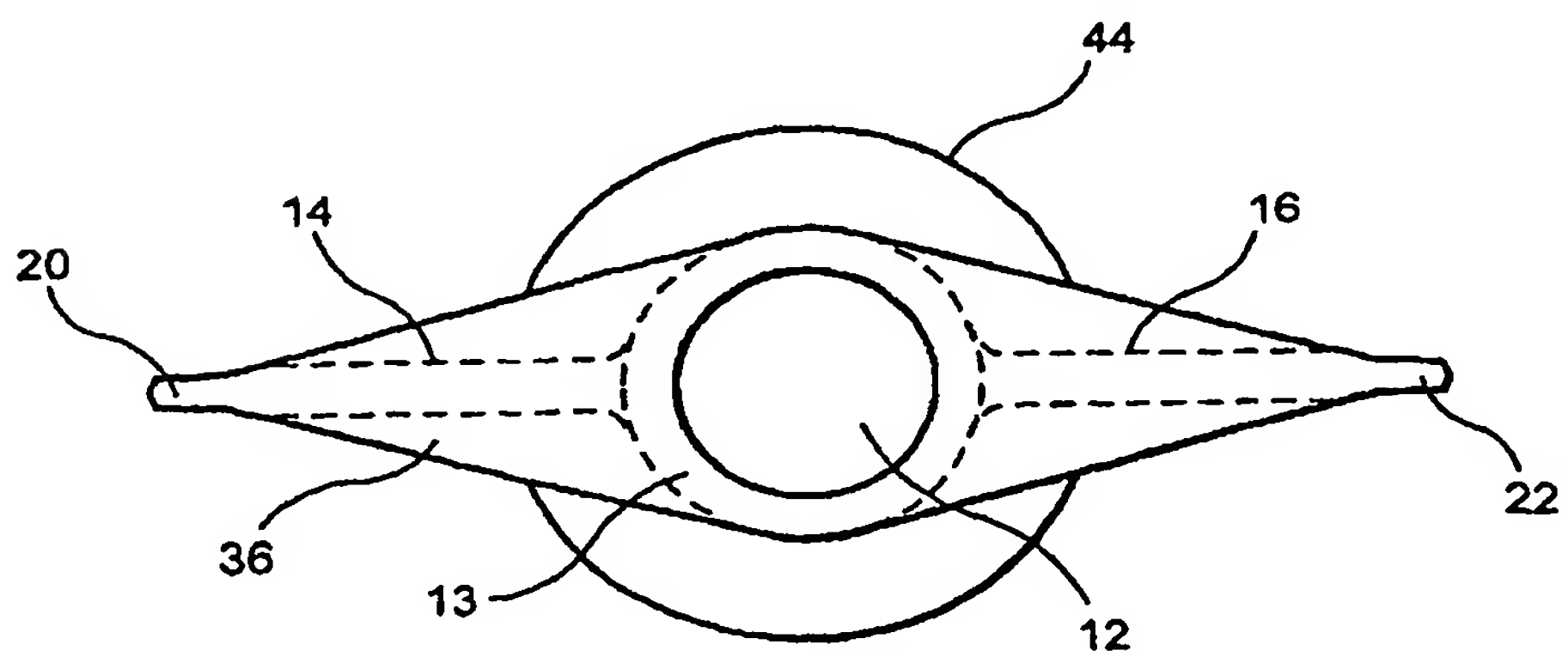


FIG. 3



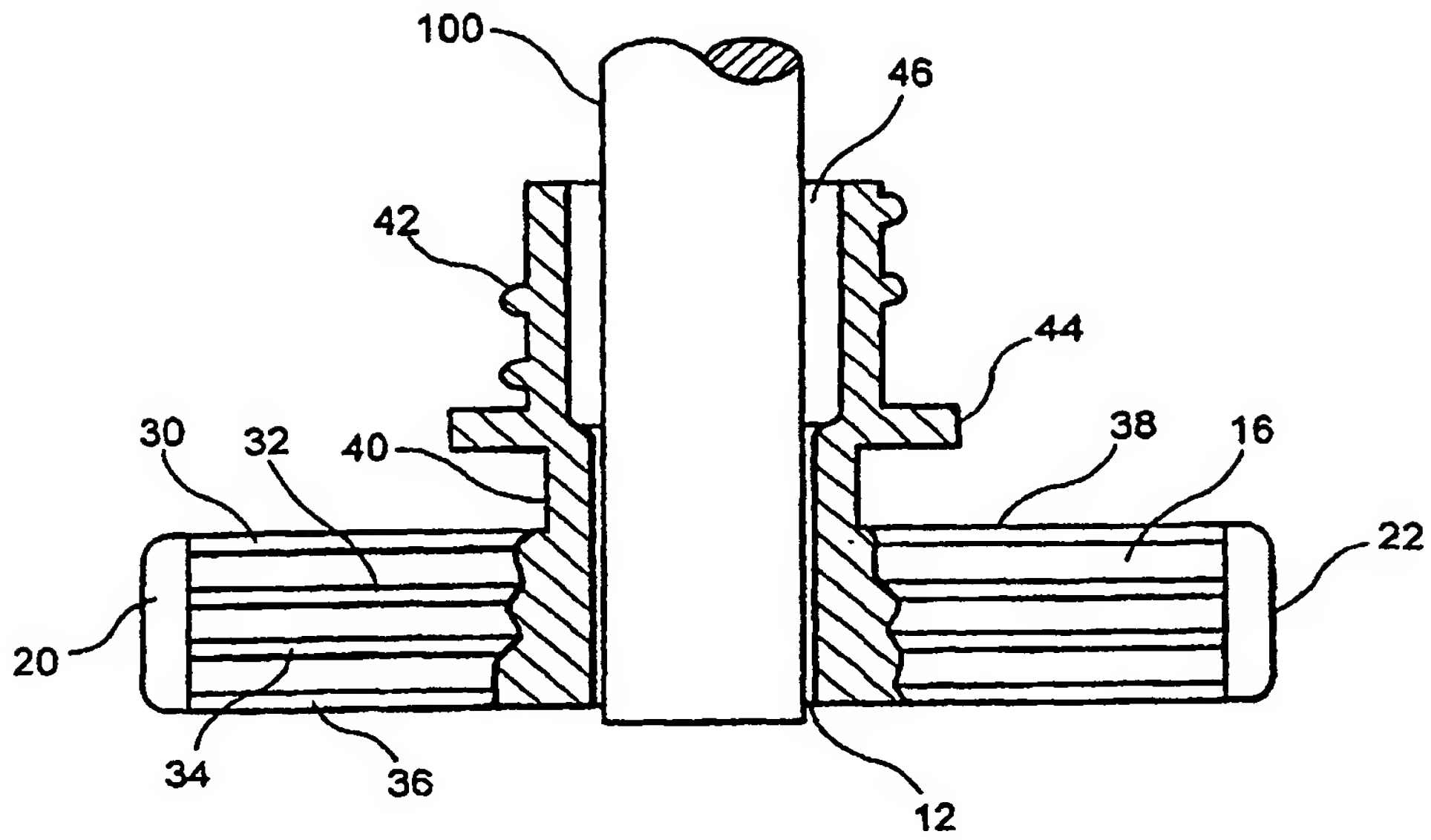


FIG. 4

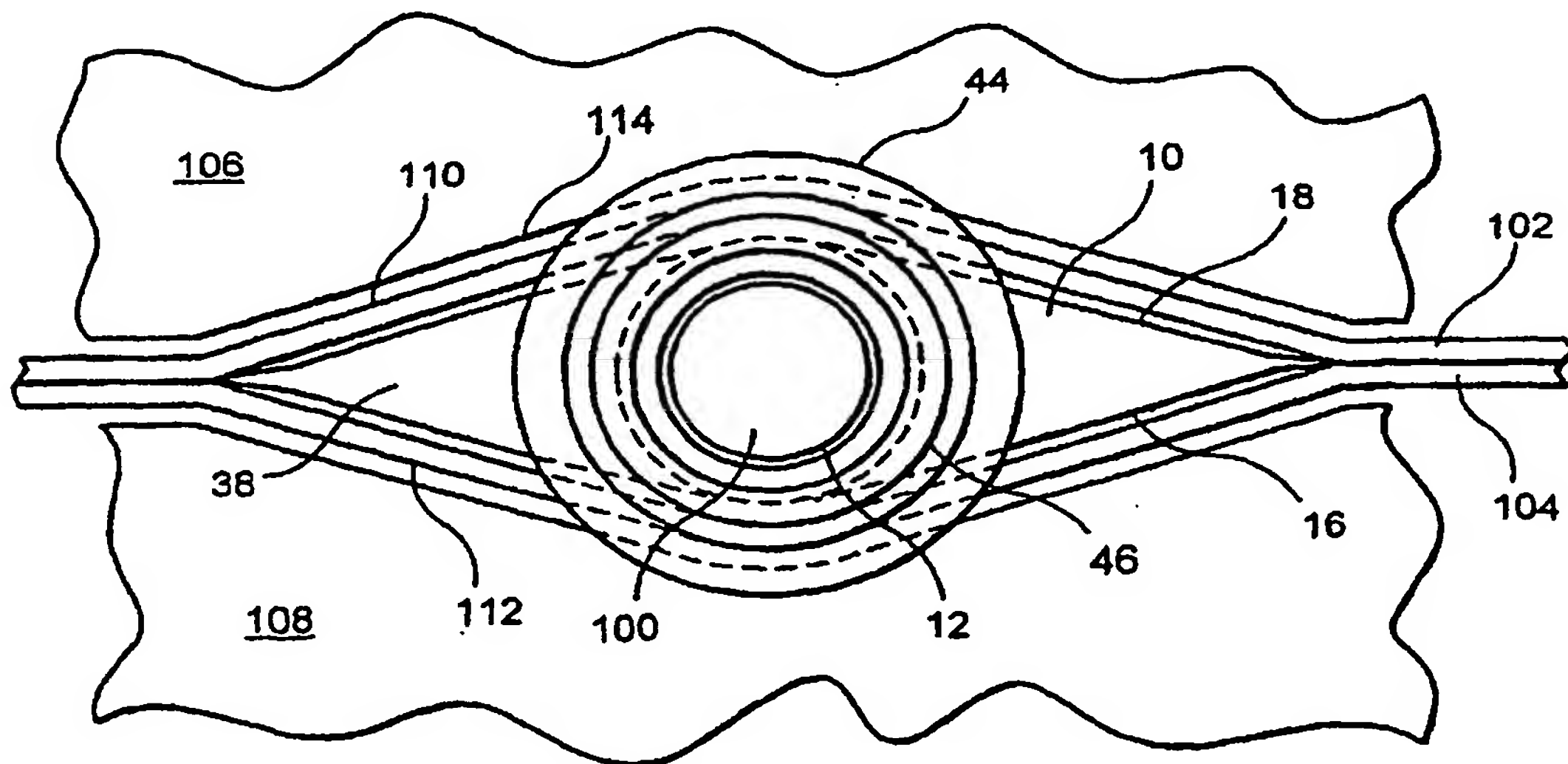


FIG. 5

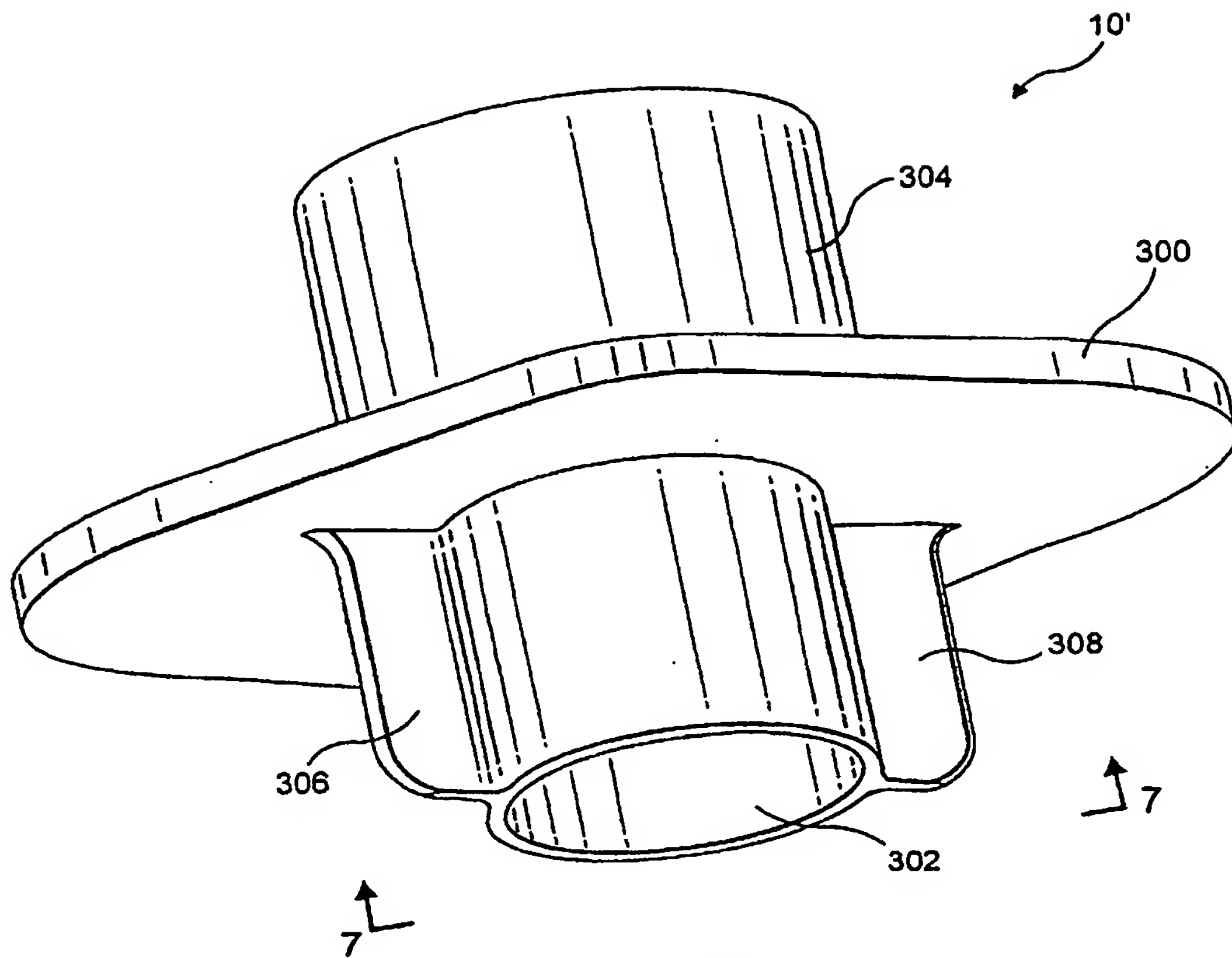


FIG. 6

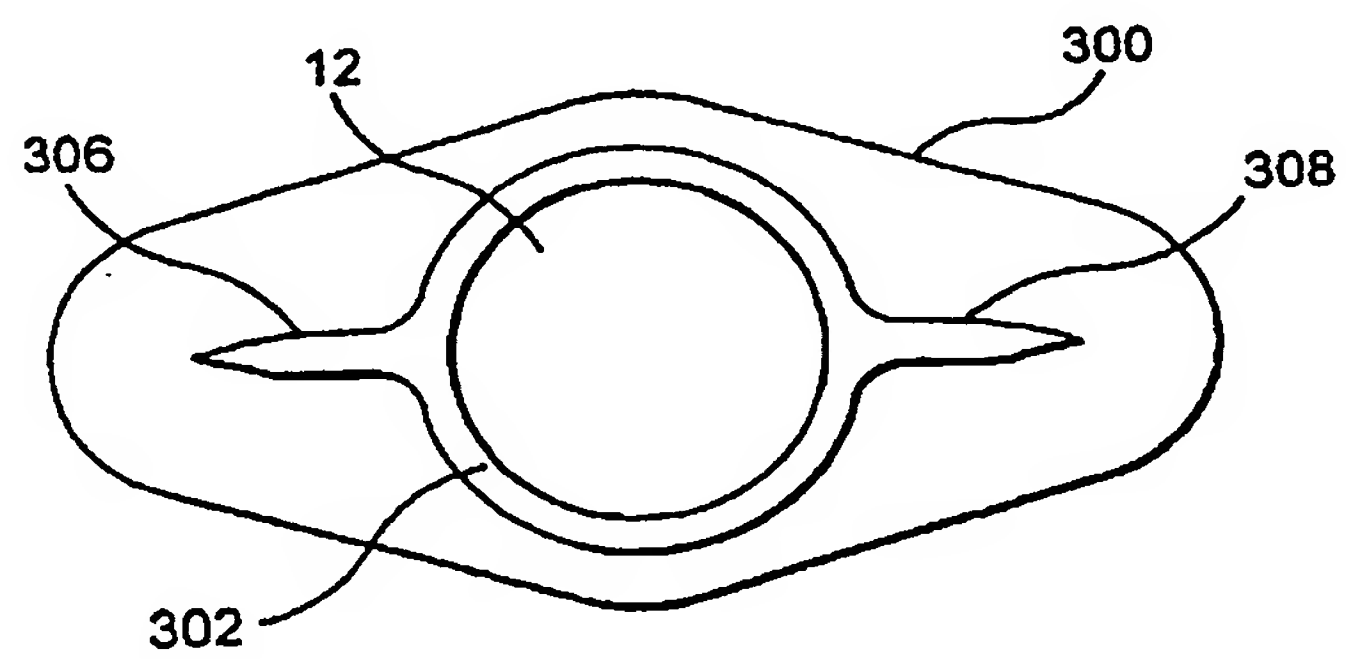


FIG. 7